

**WASHINGTON DEPARTMENT OF ECOLOGY  
POST OFFICE BOX 47600  
OLYMPIA, WASHINGTON 98504-7600**

**IN THE MATTER OF:**

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**BOISE WHITE PAPER, LLC**

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**NO. PSD 01-07, AMENDMENT 2**

**P.O. BOX 138**

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**WALLULA, WA 99363**

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Pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of Federal Regulations (40 CFR), Part 52 and regulations set forth in the Washington Administrative Code (WAC) 173-700 through 173-700-750, the Washington Department of Ecology (Ecology) is proposing issuance of PSD 01-07, Amendment 2. Based on the permit application from Boise White Paper, LLC and Ecology's investigative information used in developing the PSD permit, Ecology now finds the following:

**FINDINGS**

1. Ecology received a PSD permit amendment application on March 28, 2017, and the fee payment on March 29, 2017, for an administrative amendment to add the option of using a Continuous Emission Monitor (CEM) for carbon monoxide (CO) for the hog fuel boiler (HFB). Ecology found that using a CEM for monitoring CO is an improvement over the current requirement of monthly source tests for CO compliance monitoring. There will be no physical or process change to the emissions for the HFB, and associated control device.
2. The Boise White Paper, LLC (Boise) Wallula integrated bleached kraft pulp and paper mill (Wallula mill) is a major stationary source that has the potential to emit more than 100 tons per year (tpy) of several pollutants. This site is located in an area which has been designated Class II for the purpose of PSD evaluation, and is in attainment of the National Ambient Air Quality Standards (NAAQS) for all pollutants at the time of application for Amendment 1. The area was designated as serious nonattainment for PM<sub>10</sub> at the time of the original permit application, but since then has been re-designated as in attainment for PM<sub>10</sub>.
3. In 2001, Boise proposed modifications to the Wallula mill to increase the No. 3 Recovery Furnace (RF3) firing rate capacity from the current nominal sustained firing capacity of 2.9 100 million pounds black liquor solids per day (MM lb BLS/day) to a new nominal sustained firing capacity of 3.4 MM lb BLS/day, on an as-fired basis. Boise also planned various improvements to the Hog Fuel Boiler's (HFB) pollution control systems, including upgrading the boiler's combustion system and replacing an existing post-combustion wet scrubber with a more efficient system whose performance is based on the control capability of a dry electrostatic precipitator (ESP). These upgrades will allow the HFB to run at a rated capacity

of 343 million British thermal units per hour (MMBtu/hr). In addition, Boise proposed to make process and environmental improvements in its chemical recovery area, including changes at the slaker and evaporators. These modifications and improvements could be conducted concurrently or sequentially, and approvals for funding by Boise management are separate and distinct. PSD 01-07 was issued on June 20, 2002. A continuous, ongoing construction program was commenced within 18 months of permit issuance.

4. In 2005, funding was approved for the HFB combustion system improvements. The supplier of the HFB's combustion air process modification stated that they would only guarantee oxides of nitrogen (NO<sub>x</sub>) emissions below 0.30 pounds per million British thermal units (lb/MMBtu), not the originally permitted limit of 0.254 lb/MMBtu. Amendment 1 proposes to change the HFB NO<sub>x</sub> limit to accommodate this unanticipated requirement. No other emissions changes are proposed in Amendment 1.
5. The proposed modifications to the RF3 and HFB are subject to the following New Source Performance Standards (NSPS) in Title 40 of CFR, Part 60 (40 CFR 60):
  - 5.1. The RF3 is subject to Subpart BB of 40 CFR 60 for Total Reduced Sulfur (TRS).
  - 5.2. The HFB is subject to Subpart Db of 40 CFR 60 for NO<sub>x</sub> and is subject to Subpart D for sulfur dioxide (SO<sub>2</sub>).
6. Boise plans to replace the slaker with a new and more effective unit, resulting in an emissions reduction; the evaporators will have no direct emissions to the environment. Since neither the slaker nor the evaporators will cause any emissions increases, the changes do not trigger New Source Review (NSR) requirements or additional NSPS applicability. The slaker emissions reduction has not been relied upon in the issuance of the permit.
7. Boise submitted a PSD application to Ecology for the proposed project on August 29, 2001. After receipt of additional materials in 2001 dated September 28; October 5; November 5, 16, 21, 26, 27, and 30; December 12; and in 2002 on January 23 and February 1, 5, and 6, the application was determined to be complete on February 12, 2002.
8. Ecology received Boise's application for Amendment 1 on August 30, 2005. The application was determined to be complete on September 28, 2005.
9. Changes in emissions resulting from the proposed modifications and estimated emissions from the modified and affected units at the mill, upon completion of the proposed modifications, are presented in Table 1 below. The proposed modifications are expected to result in increased emissions of CO, NO<sub>x</sub>, volatile organic compounds (VOCs), TRS, and PM<sub>10</sub> in quantities greater than the significant emission rates (SER) specified in 40 CFR 52.21(b)(23)(i) and WAC 173-400-113(1)(d) for PSD and WAC 173-400-112(1)(d) for nonattainment NSR. Consequently, with the exception of PM<sub>10</sub>, the project must undergo

review pursuant to 40 CFR 52.21 and WAC 173400-110 for each of the above criteria pollutants. PM<sub>10</sub> emissions are addressed under a separate state regulatory order to be issued concurrently with this order.

<b>Table 1. Emissions Increases<sup>1</sup></b>			
<b>Pollutant</b>	<b>Base Actual Emissions (Two Years of Actual Emissions 1999–2000) (tpy)</b>	<b>Future Potential Emissions (tpy)</b>	<b>Net Change in Emissions for PSD Applicability (tpy)</b>
NO <sub>x</sub>	1059	1786	727 <sup>2</sup>
CO	604	2847	2244
SO <sub>2</sub>	1869	1869	0
VOC	990	1261	272
TRS	14.4	32	17.4
<sup>1</sup> Emissions increases presented in Table 1 are from those emission units that have been modified or affected as a result of this project.			
<sup>2</sup> Potential total annual NO <sub>x</sub> emissions were increased 69 tpy by Amendment 1.			

10. The VOC emissions increases are contributed by the associated emission units in the pulping and washing operation. The modified units do not contribute to any VOC emissions increases.
11. Best available control technology (BACT) is required for any individual emissions unit that contributes to the emissions increase subject to PSD permitting and that will be modified as part of the proposed project. BACT will be used to control NO<sub>x</sub>, CO, and TRS from the RF3; and NO<sub>x</sub>, CO, and SO<sub>2</sub> from the HFB. The BACT limit for SO<sub>2</sub> emissions from the HFB is found in the accompanying state regulatory order; BACT limits for NO<sub>x</sub>, CO, and TRS are contained in this order.
12. The proposed pollutant increases resulting from the project will not significantly impact air quality attainment under state or NAAQS:
  - 12.1. The proposed modification will not cause or contribute to pollutant levels in excess of state or NAAQS.
  - 12.2. The proposed modification will not cause or contribute to air quality pollutant levels above PSD increment thresholds in 40 CFR 52.21(c).
13. Dispersion models used for evaluating the ambient air quality impacts were AERMOD and ISC-PRIME for nearby ambient air quality impacts and the CalPUFF/CalMET system for distant, Class 1 area impacts.

14. The quantity of Class 2 NO<sub>2</sub> increment consumed in the immediate area of the Boise plant by this project has been estimated at 5.8 µg NO<sub>2</sub>/m<sup>3</sup> by the AERMOD model and 24.4 µg NO<sub>2</sub>/m<sup>3</sup> by the ISC-PRIME model. In either case, the maximum available NO<sub>2</sub> increment has not been consumed.
15. Criteria pollutant concentrations related to the proposed emissions increases will not exceed significance levels in any Class I area or the Columbia River Gorge National Scenic Area.
16. Visibility will not be impaired in any Class I areas. Ecology finds that this project will not adversely impact visibility in the Columbia River Gorge National Scenic Area.
17. Projected deposition of sulfur and nitrogen oxide chemical species on the Class I areas and the Columbia River Gorge National Scenic Area will not be significant.
18. The proposed pollutant increases will not significantly impact known sensitive plant or animal species in any Class I or Class II area.
19. The proposed modifications and production increase will not have a significant effect on the surrounding area's population or economic growth.
20. Ecology finds that all requirements are satisfied for PSD and NSR. Approval of the PSD permit is granted subject to the following Approval Conditions.

## **APPROVAL CONDITIONS**

1. Emissions Limits and Related Monitoring and Reporting Requirements for RF3: Upon the completion of construction and start-up of RF3 with multi-level combustion air equipment and associated controls and equipment modifications, Boise shall comply with the emissions limitations, monitoring, and reporting requirements listed in Table 2 for the RF3. The RF3 is granted a testing and break-in period. This period begins upon start-up of the modified RF3, and ends 180 days after start-up of RF3, or upon successful completion of the performance tests for RF3 specified in Approval Condition 7, whichever occurs first. This testing and break-in period is granted to allow Boise to make any changes or adjustments to RF3 CEMS, RF3 modified equipment, and RF3 pollution control equipment.

<b>Table 2. Emissions Limits and Related Monitoring and Reporting Requirements for RF3</b>			
<b>Condition Number</b>	<b>Parameter</b>	<b>Limit &amp; Averaging Period (shall not exceed)</b>	<b>Monitoring &amp; Reporting<sup>1</sup></b>
1.1	SO <sub>2</sub>	1301 tpy, 12-month rolling annual average	EPA Method 6 or 6C is the primary reference test method. Boise shall perform source tests monthly. Annual average value is calculated using actual emissions from the results of the most recent source tests. Boise shall report monthly all source test results and rolling 12-month mass emissions. <sup>2</sup> *Source tests shall be conducted at a production rate, which is at or above the average production rate in the previous month.
1.2	SO <sub>2</sub>	500 ppmvd @ 8% O <sub>2</sub> , hourly average	EPA Method 6 or 6C is the primary reference test method. Boise shall sample monthly consisting of three 1-hour sample runs using Method 6, 6C, or a test method approved in advance in writing by Ecology. Report test results monthly.
1.3	NO <sub>x</sub>	112 ppmvd @ 8% O <sub>2</sub> , daily average	EPA Method 7, 7A, 7B, or 7E is the primary reference test method. Boise shall monitor continuously using an approved CEM that conforms to 40 CFR Part 60 Appendix B, Performance Specification 2. Report exceedances monthly.
1.4	CO	500 ppmvd @ 8% O <sub>2</sub> , 24-hour average	EPA Method 10 is the primary reference test method. Boise shall monitor continuously using an approved CEM that conforms to 40 CFR Part 60 Appendix B, Performance Specification 4. Report exceedances monthly.
1.5	TRS	500 ppmvd @ 8% O <sub>2</sub> , 24-hour average	EPA Method 16, 16A, or 16B is the primary reference test method. Boise shall monitor continuously using an approved CEM operated in conformance with 40 CFR Part 60 Appendix B, Performance Specification 5. Report monitoring results and exceedances quarterly to Ecology.
<sup>1</sup> Monitoring is required only when emission unit is operating. <sup>2</sup> If monitored emissions are equal to or less than 75% of the emission limitation for any six consecutive months, emissions will be monitored by three 1-hour sample runs per quarter and reported quarterly. The time interval between successive quarterly tests shall not exceed 105 days. If monitored emissions in any one of the six most recent source tests are greater than 75% of the emission limitation listed in either Approval Condition 1.1 or 1.2, the monitoring and reporting frequency will be as stated in the condition itself.			

2. Emissions Limits and Related Monitoring and Reporting Requirements for HFB: Upon the completion of construction and start-up of the HFB with overfire combustion air equipment and associated controls and equipment modifications, Boise shall comply with the emissions limitations, monitoring, and reporting requirements listed in Table 3 for the HFB. The HFB is granted a testing and break-in period. This period begins upon start-up of the modified HFB, and ends 180 days after start-up of the HFB, or upon successful completion of the performance tests for the HFB specified in Approval Condition 7, whichever occurs first.

This testing and break-in period is granted to allow Boise to make any changes or adjustments to the HFB, the HFB's associated pollution control equipment, or the HFB's pollutant monitoring equipment as are necessary to comply with applicable rules and regulations pertaining to air quality and conditions of operation imposed herein.

<b>Table 3. Emissions Limits and Related Monitoring and Reporting Requirements for HFB</b>			
<b>Condition Number</b>	<b>Parameter</b>	<b>Limit &amp; Averaging Period (shall not exceed)</b>	<b>Monitoring &amp; Reporting<sup>1</sup></b>
2.1	NO <sub>x</sub>	0.30 lb/MMBtu, 30-day rolling average <sup>2</sup>	EPA Method 7, 7A, 7B, or 7E is the primary reference test method. Boise shall install, calibrate, maintain and operate a continuous monitoring system to monitor NO <sub>x</sub> from the HFB. Monitor continuously using an approved CEM that conforms to 40 CFR Part 60 Appendix B, Performance Specification 2. CEM data shall be averaged over a rolling 30-day period. Report monitoring results and exceedances semiannually to the Administrator (Ecology) as required by 40 CFR 60.49b(w).
2.2	CO	500 ppmvd @ 7% O <sub>2</sub> , 12-month rolling annual average	EPA Method 10/10B is the reference test method. Source test monthly consisting of three 1-hour sample runs using a modified Ecology Method 10/10B (Tedlar bag method). Annual average is calculated from monthly test results. <sup>3</sup> Report results monthly.  Ecology approves that Boise White Paper, LLC as an alternative to source testing may install, calibrate, maintain, and operate a CEM system to monitor CO from the HFB, Monitor continuously using an approved CEMS that conforms to 40 CFR Part 60, Appendix B, Performance Specification 4. CEMS data must be averaged over a rolling 12-month period. Boise White Paper, LLC must report monitoring results and exceedances monthly to the permittee's air regulatory authority of their Title V air operating permit.
2.3	Operation	Minimum operating condition for CO process monitoring	Maintain a continuous process combustion CO monitor at the boiler outlet <sup>4</sup> and monitor in-process CO concentration as a performance indicator. Whenever CO concentration at the boiler outlet is in excess of 2000 ppmvd (7% O <sub>2</sub> ) for more than 24 hours, Boise shall within 24 hours initiate corrective action to reduce in-process CO concentration. Failure to initiate corrective action within 24 hours is a violation of WAC 173-405-040(10) and may be a violation of the underlying applicable requirement. Boise shall report 24-hour average in-process CO concentration in excess of 2000 ppmvd (7% O <sub>2</sub> ), and corrective action, on a monthly basis.

<b>Table 3. Emissions Limits and Related Monitoring and Reporting Requirements for HFB</b>			
<b>Condition Number</b>	<b>Parameter</b>	<b>Limit &amp; Averaging Period (shall not exceed)</b>	<b>Monitoring &amp; Reporting<sup>1</sup></b>
2.4	Operation	Minimum operating condition for bypassing control device when firing natural gas exclusively	Maintain control device bypass valves in closed positions during wood waste firing. Monitor and record the positions of control device bypass valves at all times. Boise shall report monthly all bypass periods and the type of fuel fired during bypass period.
<sup>1</sup> Monitoring is required only when emission unit is operating. <sup>2</sup> The 0.30 lb/MMBtu emission limit satisfies the NSPS limit of 0.30 lb/MMBtu in 40 CFR 60.44b. <sup>3</sup> If monitored emissions are equal to or less than 75% of the emission limitation for any six consecutive months, emissions will be monitored by three 1-hour sample runs per quarter and reported quarterly. The time period between successive quarterly tests shall not exceed 105 days. If monitored emissions in any of the six most recent tests are greater than 75% of the emission limitation in Condition 2.2, the monitoring and reporting frequency will be as stated in Condition 2.2. <sup>4</sup> Further combustion of CO is expected to take place between the boiler outlet and the stack. The process combustion CO monitor is an internal process monitor and does not indicate direct emissions to the atmosphere.			

3. Emissions Limits and Related Monitoring and Reporting Requirements for No. 1 Power Boiler (PB1): The following condition becomes effective immediately upon the issuance of this order. This condition supersedes the corresponding emission limit found in PSD permit No. PSD-X-77-04, Appendix.<sup>1</sup>

<b>Table 4. Emissions Limits and Related Monitoring and Reporting Requirements for PB1</b>			
<b>Condition Number</b>	<b>Parameter</b>	<b>Limit &amp; Averaging Period (shall not exceed)</b>	<b>Monitoring &amp; Reporting*</b>
3.1	SO <sub>2</sub>	3025 lb/day, annual average	Based on calculations for maximum emissions, this boiler cannot exceed the SO <sub>2</sub> mass loading limit when firing natural gas. Fuel oil may be fired at any time in the No. 1 Power Boiler, subject to the stated mass loading limit. Boise shall report emissions annually. Fuel oil fired cannot exceed 2% sulfur content by weight. Maintain fuel receipts showing that all fuel oil fired is ≤ 2% sulfur.

<sup>1</sup> The underlying PSD permit limit from No. PSD-X- PSD-X-77-04, incorporated into Air Operating Permit No. 000369-7 as Condition I.G.3, related to firing fuel oil in PB1.

4. Startup Notifications:

- 4.1. Not less than 30 days prior to the initial start-up of the modified RF3 and HFB, Boise shall notify Ecology in writing of its intent to startup the modified unit(s).
- 4.2. Not less than 30 days after the end of the testing and break-in periods described in Approval Conditions 1 and 2, Boise shall notify Ecology of the end of these periods.

5. RF3 Fuel Delivery and Combustion Air Optimization:

- 5.1. Not later than 90 days after the initial start-up of the modified RF3, Boise shall notify Ecology if further modifications to its fuel delivery and combustion air system will be performed. Further modifications may include, but are not limited to, relocation of black liquor firing guns and air ports of the combustion air system.
- 5.2. Boise shall submit to Ecology an optimization plan not later than 180 days after the notification in 5.1 above. The plan shall describe envisioned optimization modifications, the schedule for making the modifications, when start-up in the optimized mode will occur, and an evaluation of the expected effect of the optimized RF3 on emissions.
- 5.3. During the period following the 180-day initial start-up, Boise shall operate the RF3 in compliance with the Conditions 1.1 through 1.5.
- 5.4. Boise shall notify Ecology at least 30 days in advance of the start-up of the optimized RF3.

6. HFB Fuel Delivery and Combustion Air Optimization:

- 6.1. Not later than the first 90 days after the initial start-up of the modified HFB, Boise shall notify Ecology if further modifications to fuel delivery and combustion air systems will be performed, including, but not limited to, modifications to overfire air, underfire air, auger, and modulating air systems.
- 6.2. Boise shall submit to Ecology an optimization plan not later than 180 days after the notification in 6.1 above. The plan shall describe envisioned optimization modifications, the schedule for making the modifications, when start-up in the optimized mode will occur and an evaluation of the expected effect of the optimized HFB on emissions.
- 6.3. During the period following the 180-day initial start-up, Boise shall operate the HFB in compliance with the emission limits in Approval Conditions 2.1 through 2.4.



- 6.4. Boise shall notify Ecology at least 30 days in advance of the start-up of the optimized HFB.

7. Initial Performance Tests:

- 7.1. Initial performance tests shall be conducted in accordance with the appropriate methods set forth in 40 CFR Part 60, Appendix A as amended through July 1, 2001. Each performance test shall consist of three separate runs using the applicable test method, in accordance with 40 CFR 60.8(f). Initial performance tests are to be performed once only for the start-up of each modified emission unit subject to this determination.
- 7.2. Boise shall provide written notice to Ecology not less than 30 days prior to the scheduled performance test. Such notification shall include a detailed description of the intended performance test plan(s).
- 7.3. Not later than 180 days after start-up of the modified RF3, Boise shall complete initial performance tests on the RF3 to demonstrate compliance with the limits in Approval Condition 1. If Boise notifies Ecology that the RF3 will be optimized as per Approval Condition 5 above, the Initial Performance Tests for the RF3 may, upon written approval of Ecology, be postponed until no later than 180 days after the start-up of the optimized unit, according to the schedule given in Approval Condition 5 above.
- 7.4. Not later than 180 days after start-up of the modified HFB, Boise shall complete initial performance tests on the HFB to demonstrate compliance with the limits identified in Approval Conditions 2.1 and 2.2. If Boise notifies Ecology that the HFB will be optimized as per Approval Condition 6 above, the Initial Performance Tests for HFB may, upon written approval of Ecology, be postponed until no later than 180 days after the start-up of the optimized unit, according to the schedule given in Approval Condition 6 above.

8. Continuous Emissions Monitoring Systems: Any continuous emissions monitoring system (CEMS) required by this permit shall conform with EPA 40 CFR 60, Appendix B Performance Specifications as indicated below:

- 8.1. CEMS for NO<sub>x</sub> – Performance Specification 2
- 8.2. CEMS for O<sub>2</sub> – Performance Specification 3
- 8.3. CEMS for CO – Performance Specification 4
- 8.4. CEMS for TRS – Performance Specification 5

During the initial testing and break-in period allowed in Approval Conditions 1 and 2, Boise shall evaluate the installed CEMs against the above performance specifications and make any adjustments necessary for compliance.

9. Alternate compliance and monitoring methodology: Ecology may approve alternate compliance determination methods that are of equivalent stringency for any air pollutant regulated by this permit. Boise must request and receive Ecology approval in writing prior to using an alternative compliance test method. If Boise wishes to use an alternate to an EPA test method, the alternate must be submitted to and approved by EPA prior to its use. Ecology may approve modifications to the compliance monitoring upon written request from Boise or if alternative monitoring is built into the Title V air operating permit.
10. Replacement of Existing Overlapping Conditions: The conditions listed in this approval will supersede any overlapping conditions listed in PSD-X-77-04 and PSD-95-04 Scenario 1. The rescinded conditions and their superseding conditions are summarized in Table 4 below.

Table 4. Replacement of Overlapping Conditions		
Permit Limit Description	Overlapping Condition in Previous Permits	Condition Which Supersede Previous Condition
RF3 NO <sub>x</sub> Emissions	PSD-95-04, Condition I-2	Approval Condition 1.2
RF3 CO Emissions	PSD-95-04, Condition I-3	Approval Condition 1.3
RF3 TRS Emissions	PSD-95-04, Condition I-5	Approval Condition 1.5

11. The HFB PM<sub>10</sub> and SO<sub>2</sub> emissions limits in PSD-X-77-04 no longer apply. These conditions are superseded by Approval Condition 2 in the state regulatory approval order number DE02AQIS-3588 issued concurrent to this order. Approval Condition 3.1 of this order supersedes the corresponding condition found in PSD-X-77-04, as incorporated into the Air Operating Permit No. 000369-7 as Condition I.G.3.
12. Enforcement: Any activity that is undertaken at the Boise Wallula mill, in a manner which is inconsistent with this determination, shall be subject to Ecology enforcement under applicable regulations. Nothing in this determination shall be construed so as to relieve Boise of its obligations under any state, local, or federal laws or regulations.
13. Reporting and Records:
- 13.1. Boise shall retain copies of all required reports to Ecology for at least five years.
- 13.2. Source test reports and process data relevant to required emission limit testing shall be submitted to Ecology's Industrial Section and Air Quality Program within 30 days of the end of each calendar month (unless a different testing and reporting schedule has been approved by Ecology) in which the final source test report is received.
- 13.3. Test reports shall be submitted in a format approved by Ecology which shall include, but not be limited to, the following:

- 13.3.1. Process or control equipment operating parameters relevant to the source test.
- 13.3.2. For each applicable emission unit, the pollutant concentrations in the units and averaging times of the standard.
- 13.3.3. For each applicable emission unit, total pollutant mass emissions in the units and averaging times of the standard.
- 13.3.4. Results of any stack tests required by this permit during the monitoring period.
- 13.3.5. The duration and nature of the downtime of any required Continuous Emissions Monitoring System (quarterly report kept on site for inspection).
- 13.4. All other reports required by Approval Conditions 1 through 7 shall be submitted to Ecology's Industrial Section and Air Quality Program.
- 13.5. Once the requirements of this PSD approval are incorporated into an issued Air Operating Permit, reports pursuant to Approval Conditions 1 through 7, 12, and 13 are no longer required to be submitted to the Air Quality Program.
- 13.6. Excess Emissions reporting: For each occurrence of monitored or measured emissions in excess of the limits in this permit, an excess emission report shall be provided to Ecology's Industrial Section or its authorized representative by the 15th day of the month following the reporting period. The excess emission report shall include the following information:
  - 13.6.1. Time of the occurrence.
  - 13.6.2. Magnitude of the emission or process parameters excess.
  - 13.6.3. Duration of the excess.
  - 13.6.4. The probable cause.
  - 13.6.5. Corrective actions taken or planned.
  - 13.6.6. Any other agency contacted besides Ecology.
- 14. Operations and Maintenance (O&M) Manuals: At all times, including periods of abnormal operation and upset, Boise shall, to the extent practicable, operate and maintain emissions units with modifications covered by this permit that have the potential to affect emissions to the atmosphere, along with associated air pollution control equipment, in a manner consistent with good air pollution control practice. For said units, O&M manuals shall be prepared, maintained on-site, and updated as needed. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to Ecology which may include, but is not limited to, monitoring results, opacity observations, inspections of the source, and reviews to determine that the mill is following its O&M procedures.

15. **Approval Duration:** This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of final approval. If construction of the facility is discontinued for a period of eighteen (18) months, approval for unconstructed elements of this project is invalid. Ecology may extend the 18-month period upon a satisfactory showing that an extension is justified, pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance. Emission limits from individual units shall become effective only after completion of construction and startup of the modified emission units.
16. **Inspection and Entry:** Upon consent of Boise or upon presentation of credentials and other documents as may be required by law, Ecology or an authorized representative shall be allowed to:
- 16.1. Enter the source at reasonable times.
  - 16.2. Have access to and copy at reasonable times any records that must be kept under this permit and only those records.
  - 16.3. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
  - 16.4. As authorized by WAC 173-400-105 and the federal Clean Air Act, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements. [WAC 173-400-105(4); WAC 173-401-630(2)]

**Prepared by:**

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Date

**Approved by:**

Kathy Taylor, Ph.D.  
Deputy Air Quality Program Manager  
Washington Department of Ecology

Date

## APPENDIX A

### Algorithms for Emissions Calculations

The following algorithms set forth the calculation method for those emission limits that the designated reference test method itself does not yield a direct emission measurement; the SO<sub>2</sub> tons per year limits are of this type. Boise may use an equivalent method with written approval from Ecology.

#### Determination of Compliance with the SO<sub>2</sub> tpy Emissions Limit at the RF3

**SO<sub>2</sub> (mass per time) = Concentration \* Air Flow Rate \* Unit Conversion Factor \* Time Adjustment**

Where **concentration** is case specific in terms of averaging period as required by the permit. The concentration should be obtained using EPA Method 6 or any other test method approved by the Department of Ecology.

**Air Flow Rate** must be representative of normal operations and is in the unit of dry standard cubic feet per minute during the applicable source test period.

**Unit Conversion Factor** is the density of SO<sub>2</sub>, 0.166 lb per cubic foot of SO<sub>2</sub> based on a molecular weight of 64 lb/lb-mol and an ideal gas volume of standard conditions of 385 ft<sup>3</sup>/lb-mol.

**Time Adjustment** is case specific and is dependent on the flow rate time unit.

This value will then be averaged with the preceding year of the applicable calculated SO<sub>2</sub> emission rates (monthly, quarterly, or other test frequency, as applicable) to determine the rolling annual average.

#### Determination of Compliance with the SO<sub>2</sub> lb/day Emissions Limit at the PB1

**SO<sub>2</sub> (mass per time) = AP-42 Emission Factor \* Fuel Sulfur Content \* Amount of Fuel Used**

Where **AP-42 Emission Factor** is the SO<sub>2</sub> emission factor listed in U.S. EPA's "Compilation of Air Pollutants Emission Factors (AP-42)" The SO<sub>2</sub> emission factor is expressed in pounds per thousand gallons (lb/1000 gallons) as a multiple of the fuel sulfur content. At the time of issuance of this order, AP-42 lists the SO<sub>2</sub> emission factor to be 157 S lb SO<sub>2</sub> /1000 gallons, where S is the fuel sulfur content as defined below.

**Fuel Sulfur Content** is the sulfur content of the fossil fuel in percent. For example, if Boise proposes to use 1.7 % sulfur fuel; therefore, the fuel sulfur content to be used in the above equation is 1.7.

**Amount of Fuel Used** is the amount of fuel used in a year, in 1000 gallons.

This value (lb/year) will then be divided by 365 days per year to determine the lb/day value based on an annual average. Compare with the 3025 lb/day SO<sub>2</sub> limit to determine compliance.

Determination of Compliance with the NO<sub>x</sub> lb/MMBtu Emissions Limit at the HFB

**NO<sub>x</sub> (lb per million Btu) = Concentration \* Unit Conversion Factor\*F Factor\* 20.9/(20.9-O<sub>2</sub> Percent)**

Where **concentration** is obtained using EPA Method 7, NO<sub>x</sub> CEM data, or an alternative test method approved by the Department of Ecology. It is expressed on a dry basis.

**Unit Conversion Factor** is the density of NO<sub>x</sub>, 0.1194 lb per cubic foot of NO<sub>x</sub> at 20°C.

**F Factor** is the volume of combustion components per unit of heat content as calculated using Equation 1916 for multiple fuels and Table 19-2 of EPA Method 19.

**O<sub>2</sub> Percent** is the oxygen percent expressed on a dry basis and averaged over the same averaging time used in the concentration measurement.

This value (lb/MMBtu) will then be averaged with previous twenty-nine days to determine the rolling 30-day average. Compare with 0.30 lb/MMBtu NO<sub>x</sub> limit to determine compliance.

## APPENDIX B

### Glossary of Terms Used in this Approval Order

**Annual average.** In defining the averaging period of a particular limit, annual average means the calendar year average. Determining compliance with a limit with an annual average shall be based on the unit's operation for a calendar year.

**Calendar year average.** The calendar year average is the average value of a given parameter over the period beginning on January 1 and ending on December 31.

**Corrective action.** Action taken by permittee with the intent of removing the identified deviation.

**Operating/in operation.** In operation means engaged in activity related to the primary design function of the source. For example, a straight recovery furnace is in operation only when combusting black liquor and a lime kiln are in operation only when feeding lime mud.

**Rolling annual average.** In defining the averaging period of a particular emissions limit, the rolling annual average means the average of the emissions readings of the previous year leading up to the reporting date. For a rolling annual average limit with an associated monthly reporting requirement, the rolling annual average is a 12-month rolling average, calculated monthly. The need for this term is necessitated by the possibility of different reporting frequencies for a single emissions limit, based on the performance of the unit compared to the permit limit.

**Start-up.** For RF3, start-up is defined as the time when black liquor is introduced into the unit. For HFB, startup is defined as the time when wood waste is introduced into the unit.

**30-day rolling average.** In defining the averaging period of a particular emissions limit, the rolling 30-day average means the average of the emissions readings of the previous 30 days leading up to the reporting date.

**60-minute period.** The period from the top of one hour to the top of the next hour (e.g., 07:00:00 to 07:59:59).